

## CLAIMS

What is claimed is:

1. A method for calculating signal-to-interference ratio (SIR) of a mobile device in a wireless communication system, the method comprising the steps of:  
5 non-coherently processing a communication signal transmitted by the mobile device;  
estimating interference power of the communication signal;  
scaling the estimated interference power;  
subtracting the scaled estimated interference power from the processed communication signal to thereby estimate signal power; and  
10 calculating the SIR by dividing the estimated signal power by the estimated interference power.
2. The method of claim 1, wherein the step of non-coherently processing includes the steps of:  
15 multiplying a portion of the communication signal by a pilot symbol sequence in each finger of a receiver to produce a respective multiplied signal;  
calculating an average of the multiplied signal over a length of the pilot symbol sequence in each of the fingers of the receiver;  
squaring the respective averages in the fingers of the receiver; and  
20 adding the squares of the fingers of the receiver.
3. The method of claim 1, wherein signal power is estimated based on pilot symbols and any one or more of TPC, TFCI, and FBI symbols.





means for estimating interference power of the communication signal;

means for scaling the estimated interference power;

means for subtracting the scaled estimated interference power from the processed communication signal to thereby estimate signal power; and

5 means for calculating the SIR by dividing the estimated signal power by the estimated interference power.

14. The system of claim 13, wherein the means for non-coherently processing comprises:

10 means for multiplying a portion of the communication signal by a pilot symbol sequence in each finger of a receiver to produce a respective multiplied signal;

means for calculating an average of the multiplied signal over a length of the pilot symbol sequence in each of the fingers of the receiver;

means for squaring the respective averages in the fingers of the receiver; and

15 means for adding the squares of the fingers of the receiver.

15. The system of claim 13, wherein signal power is estimated based on pilot symbols and any one or more of TPC, TFCI, and FBI symbols.

20 16. The system of claim 13, wherein the interference power is estimated based on pilot symbols and TPC symbols.



means for adjusting power of the communication signals transmitted by the mobile phone based on the power control signals.

20. The system of claim 19, wherein signal power is estimated based on pilot symbols  
5 and any one or more of TPC, TFCI, and FBI symbols.

21. The system of claim 19, wherein the interference power is estimated based on pilot symbols and TPC symbols.

10 22. A wireless communication system having a base station and a mobile device,  
comprising:

a processor;

a memory communicatively coupled to the processor;

software executing in the processor configured to:

15 non-coherently process a communication signal transmitted by the mobile device;

store the processed communication signal in the memory;

estimate interference power of the communication signal;

store the estimated interference power in the memory;

scale the estimated interference power;

20 store the scaled estimated interference power;

subtract the scaled estimated interference power from the processed communication signal to thereby estimate signal power;

store the scaled estimated signal power in the memory; and

calculate the SIR by dividing the estimated signal power by the estimated interference power.

23. A wireless communication system having a base station and a mobile device,  
5 comprising:  
a processor;  
a memory communicatively coupled to the processor;  
software executing in the processor configured to:
- 10 non-coherently process a communication signal transmitted by the mobile device;  
store the processed communication signal in the memory;  
estimate interference power of the communication signal;  
store the estimated interference power in the memory;  
scale the estimated interference power;  
store the scaled estimated interference power;  
15 subtract the scaled estimated interference power from the processed  
communication signal to thereby estimate signal power;  
store the estimated signal power in the memory; and  
calculate the SIR by dividing the estimated signal power by the estimated  
interference power;  
20 store the calculated SIR in the memory;  
compare the calculated SIR with a target SIR, which is stored in the memory, to  
thereby generate a power control signal;  
transmit the power control signal from the base station to the mobile phone; and

adjust power of the communication signals transmitted by the mobile phone based on the power control signal.